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Periconiella liquidambaricola sp. nov. – a new Chinese hyphomycete

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Abstract — The new species *Periconiella liquidambaricola*, collected on living leaves of *Liquidambar formosana* (*Altingiaceae*) in Jiangxi Province, China, is described, illustrated and compared with other species of the genus *Periconiella*. The new fungus is the first species described from a host belonging to the *Altingiaceae*. *Periconiella liquidambaricola* is well characterized by its very long conidiophores and smooth, pale scolecosporous conidia. It has similar conidia to *Periconiella lygodii* on fronds of *Lygodium flexuosum* in India, but differs in having conidia with attenuated to acute apexes and much longer conidiophores with uninflated bases.

Key words — *Ascomycota*, asexual morph, *Periconiella qualeicola*, Asia

Introduction

Leaves of *Liquidambar formosana* infected by a range of plant pathogenic micromycetes were recently collected during a biodiversity-ecosystem study in a subtropical forest near Xingangshan, Jiangxi Province, China. One of these fungi had conidiophores with repeatedly and densely branched apices, pigmented conidiophores with several conspicuous conidiogenous loci, and solitary, holoblastically formed conidia that was readily identifiable as a species of the genus *Periconiella* Sacc. This fungus represents the first collection of a *Periconiella* species on a host in the *Altingiaceae*. A comparison with other species assigned to *Periconiella* revealed that the Chinese collections represent an undescribed species.

Materials & methods

Light microscopy (Olympus BX50) was used to examine the material (unstained samples mounted in distilled water, oil immersion, 1000×). The ranges of sizes for conidiophores, conidia and other structures were based on 30 measurements. Digital

images were made with a Zeiss Axioskop 2 with Zeiss AxioCam HR and occasionally optimized with the software Zeiss AxioVision. Freehand drawings were made on the basis of microscopic preparations.

Taxonomy

Periconiella liquidambaricola U. Braun, S. Bien & Hönig, **sp. nov.** Figs. 1, 2

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Periconiellae lygodii *morphologice similis sed maculis foliorum nullis, conidiophoris multo longioribus, ad basim non inflatis et conidiis apice attenuato vel acuto.*

Type: China, Jiangxi Province, Xingangshan, subtropical forest site of the BEF-China Project, 29.1250° N, 117.9085° E, on living and wilting leaves of *Liquidambar formosana* (*Altingiaceae*), 8 Sep. 2013, coll. S. Bien (**Holotype**-HAL 2673 F).

Etymology: Derived from the name of the host genus (inhabitant of *Liquidambar*).

Leaf spots indistinct or lacking. Colonies on living green leaves or on diffuse, discolored patches of wilted leaves, yellow or ochraceous to pale brown. Mycelium internal and external; superficial hyphae emerge through stomata, branched, straight to sinuous, 1–4 µm wide, septate, subhyaline to medium brown, thin-walled, verruculose. Stromata not developed. Conidiophores solitary, scattered, arise from superficial hyphae, at the top of mother cells, erect, straight to slightly curved, 400–700 µm long, unbranched stalk 5–10 µm wide, not swollen at the base, pluriseptate throughout, distance between septa 25–50 µm, dark brown throughout or somewhat paler towards the apex, wall thickened, 1–2 µm, smooth, apical portion 2–5 times densely forked, branched part 50–100 µm long, primary branches about 25–70 µm long, subcylindrical. Conidiogenous cells integrated, terminal, 10–30 µm long and 3–6 µm wide, subcylindrical or enlarged (subclavate), up to 9 µm, straight to moderately geniculate-sinuous, with a single or several conspicuous conidiogenous loci,

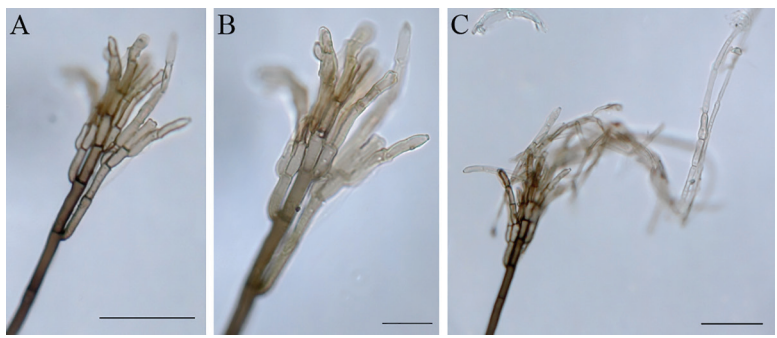

Fig. 1. *Periconiella liquidambaricola*. Micrographs of branched apical portions of conidiophores: A. focussed on outline; B. focussed on conidiogenous loci; C. with adherent and detached conidia. Bars: A, C = 50 µm; B = 20 µm.

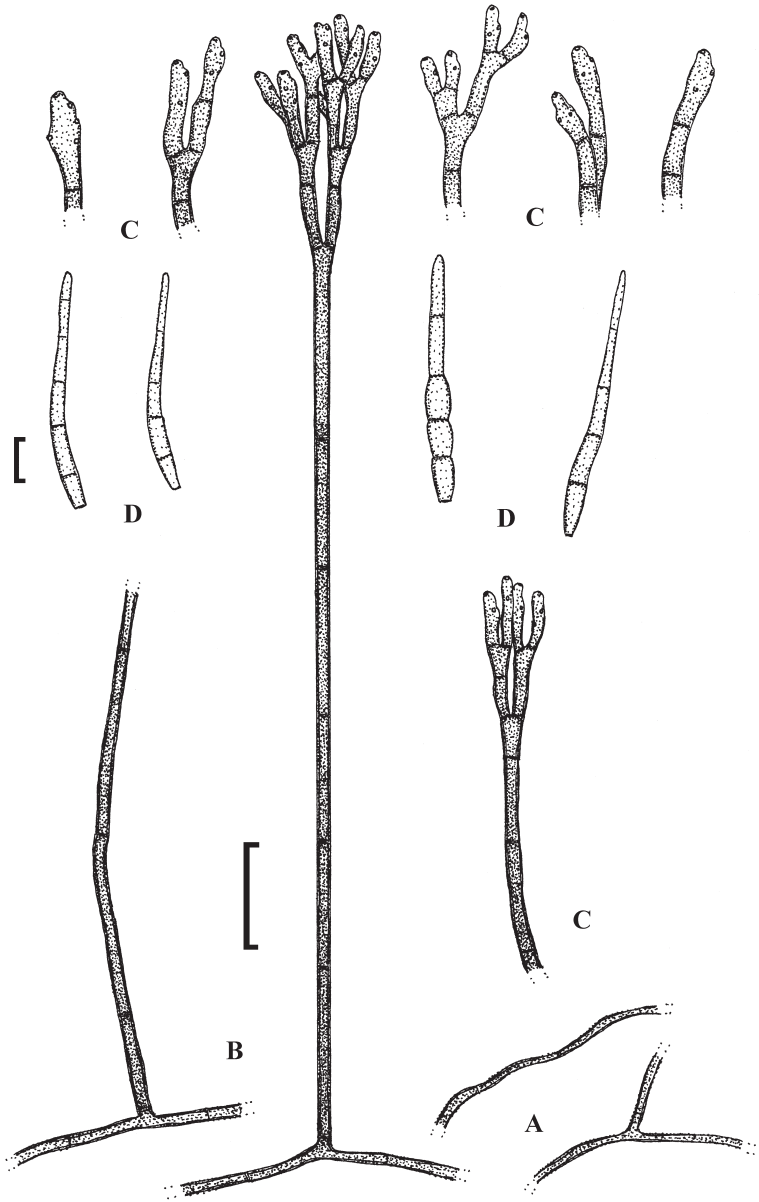

Fig. 2. *Periconiella liquidambaricola*.
A. superficial hyphae; B. solitary conidiophores arising from superficial hyphae;
C. branched apical parts of conidiophores; D. conidia. Bars: B, C. = 50 μm; D = 10 μm.

circular, ring-like, 1.5–3 µm diam, rim darkened-refractive, barely or slightly thickened. Conidia solitary, obclavate, attenuated towards the tip, 50–140 × 4–7.5 µm, 3–7-septate, sometimes constricted at the septa, pale brown, thin-walled, smooth, apex subobtuse to pointed, base short obconically truncate, hila 2–2.5 µm wide, darkened-refractive, at least around the rim.

Discussion

Arzanlou et al. (2007) published a modern description of *Periconiella* and revealed its phylogenetic affinity within the *Mycosphaerellaceae*. *Periconiella velutina* (G. Winter) Sacc., the type species, together with most other species assigned to *Periconiella* are characterized by having amero-, didymo- or phragmosporous conidia (Ellis 1967, 1971, 1976; Priest 1991; Hosagoudar & Braun 1995; McKenzie 1996; Arzanlou et al. 2007; Mafia et al. 2008, etc.). All known species of this genus are specialized and confined to hosts in particular genera of plant families. *Periconiella liquidambaricola* is the first species described from a host in the *Altingiaceae*.

The conidial shape places *P. liquidambaricola* in a small group of species characterized by scolecosporous conidia. *Periconiella lygodii* Arch. Singh et al. ex U. Braun (Braun 2004), described from India on *Lygodium flexuosum*, is a morphologically similar species. A record of "*Periconiella* sp. close to *P. rapaneae* M.B. Ellis" on *Lygodium flexuosum* from Myanmar (Thaung 2008) seems to belong to *P. lygodii*. Additional records of *P. lygodii* are known from the Philippines (Begum et al. 2009) and Taiwan (Kirschner & Chen 2010), in both cases on *Lygodium japonicum*, and from Laos on *L. polystachyum* (Phengsintham et al. 2013). *Periconiella lygodii* is characterized by similar smooth scolecosporous conidia, but forms distinct leaf spots, much shorter conidiophores that are enlarged at the base, and conidia that are rounded at the apex (Braun 2004).

Periconiella rapaneae M.B. Ellis on *Rapanea* in Ecuador (Ellis 1967, 1971) is morphologically close to *P. lygodii* but differs in having long primary branches (to 170 × 5–8 µm). *Periconiella araliacearum* G.F. Laundon (Laundon 1972), *P. arcuata* Arzanlou et al. (Arzanlou et al. 2007), *P. longispora* Kamal et al. (Kamal et al. 1979), *P. maianthemi* R. Kirschner (Kirschner & Piepenbring 2008) and *P. santaloidis* M.B. Ellis (Ellis 1967, 1971) are similar species. *Periconiella araliacearum* differs in having much shorter conidiophores (to 200 µm) with sparingly branched apices, and long, verruculose conidia (to 170 µm). *Periconiella longispora*, described from India on *Litsea chinensis*, is characterized by having long conidiophores (to 800 µm) formed in fascicles, with branches up to 175 µm, and rather broad (36–180 × 4.5–9.5 µm), smooth and 3–20-septate conidia. *Periconiella arcuata* is distinct with its falcate, verruculose conidia, and *P. maianthemi* is distinguishable by having much shorter conidiophores

(200–435 µm) and shorter verruculose conidia, (13.5–)19–43(–75) µm. *Periconiella santaloidis* differs in having conidiophores with densely branched apices, short branchlets and verruculose conidia.

An additional comparable species is:

Periconiella qualeicola Dorn.-Silva & Dianese, **nom. nov.**

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≡ *Periconiella longispora* Dorn.-Silva & Dianese, Mycologia 95: 1246, 2004 ["2003"], nom. illeg.,
non *P. longispora* Kamal, Suj. Singh & R.P. Singh,1979.

This leaf-spotting hyphomycete described from Brazil (Dornelo-Silva & Dianese 2004), can be distinguished by its much wider cylindrical conidia (37–95 × 5–8 µm).

Periconiella liquidambaricola seems to be rather common in the subtropical forest site near Xingangshan, Jiangxi Province. Numerous leaf samples of *Liquidambar formosana* were collected for mycological examination. Mycelium with pigmented verruculose hyphae assignable to *P. liquidambaricola* has been found on most leaves, but well developed conidiophores have been observed on a limited number of leaves.

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Literature cited

Arzanlou M, Groenewald JZ, Gams W, Braun U, Crous PW. 2007. Phylogenetic and morphotaxonomic revision of *Ramichloridium* and allied genera. Studies in Mycology 58: 57-93. http://dx.doi.org/10.3114/sim2007.58.03

Begum MM, Shivas RG, Cumagun CJR. 2009. First record of *Periconiella lygodii* occurring on *Lygodium japonicum* in the Philippines. Australasian Plant Pathology Notes 4: 17-18.

Braun U. 2004. *Periconiella* species occurring on ferns. Feddes Repertorium 115: 50-55. http://dx.doi.org/10.2307/3761924

Dornelo-Silva D, Dianese JC. 2004. Hyphomycetes on the *Vochysiaceae* from the Brazilian cerrado. Mycologia 95: 1239-1251. http://dx.doi.org/10.2307/3761924

Ellis MB. 1967: Dematiaceous hyphomycetes VIII. Mycological Papers 111: 1-46.

Ellis MB. 1971: Dematiaceous Hyphomycetes. Kew.

Ellis MB. 1976: More Dematiaceous Hyphomycetes. Kew.

Hosagoudar VB, Braun U. 1995. Two new Indian hyphomycetes. Indian Phytopathology 48: 260-262.

Kamal, Singh S, Singh RP. 1979. A new species of *Periconiella* from India. Current Science 48: 211-212.

Kirschner R, Chen CJ. 2010. *Periconiella* species (anamorphic *Mycosphaerellaceae*) from Taiwan. Fungal Diversity 44: 135-148. http://dx.doi.org/10.1007/s13225-010-0054-0

Kirschner R, Piepenbring M. 2008. Two new hyphomycetes from Panama. Mycological Progress 7: 21-29. http://dx.doi.org/10.1007/s11557-007-0549-6

Laundon GF. 1972. Records of fungal plant diseases in New Zealand – 2. New Zealand Journal of Botany 9: 610-624. http://dx.doi.org/10.1080/0028825X.1971.10430224

Mafia RG, Ferreira EM, Ferreira FA, Braun U, Pereira OL. 2008. *Periconiella lecythidis* sp. nov., the causal agent of a zonate leaf spot disease of the Brazilian tree *Lecythis pisonis*. Mycological Progress 7: 49-52. http://dx.doi.org/10.1006/s11557-007-0552-y

McKenzie EHC. 1996. A new species of *Periconiella* on *Pomaderris*. Mycotaxon 59: 43-45.

Phengsintham P, Chukeatirote E, McKenzie EHC, Hyde KD, Braun U. 2013. Monograph of cercosporoid fungi from Laos. Current Research in Environmental and Applied Mycology 3: 24-158.

Priest MJ. 1991: Species of *Periconiella* and *Stenella* on *Proteaceae* in Eastern Australia. Mycological Research 95: 924-927. http://dx.doi.org/10.1016/S0953-7562(09)

Thaung MM. 2008. A list of *Hyphales* (and *Agonomycetes*) in Burma. Australasian Mycologist 27: 149-172.